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| APPLICATION NO.             | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------|-------------|----------------------|---------------------|------------------|
| 09/893,965                  | 06/29/2001  | Jeong Hyun Kim       | 8733.472.00         | 6105             |
| 30827                       | 7590        | 10/07/2003           | EXAMINER            |                  |
| MCKENNA LONG & ALDRIDGE LLP |             |                      | ORTIZ, EDGARDO      |                  |
| 1900 K STREET, NW           |             |                      | ART UNIT            |                  |
| WASHINGTON, DC 20006        |             |                      | PAPER NUMBER        |                  |
|                             |             |                      | 2815                |                  |

DATE MAILED: 10/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/893,965

Applicant(s)  
Kim Et.al.

Examiner  
Edgardo Ortiz

Art Unit  
2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Aug 29, 2003
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other:

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### **DETAILED ACTION**

This Office Action is in response to an amendment filed August 29, 2003 in which Applicant amended claim 17.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-8 and 12-17 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Applicant's admitted prior art figures 1-2E, and their description on pages 2-4 of the instant application, in view of AGFA (PEDOT Coating Solutions and Screen Printing Pastes Product in development). With regard to Claim 1, Applicant's admitted prior art teaches a first substrate (21), a second substrate (21a) adjacent the first substrate, a plurality of switching elements (25a-d) arranged on the first substrate, a plurality of pixel electrodes (29) on the first substrate and a liquid crystal layer interposed between the first and second substrates, see figure 1.

However, Applicant's admitted prior art fails to teach that pixel electrodes comprise organic material. AGFA discloses a transparent conductive polymer which can be used as the material for

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transparent electrodes in thin film transistors. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Applicant's admitted prior art to include a pixel electrode comprising an organic material, as clearly suggested by AGFA, in order to provide an electrode in a LCD device with full flexibility and improved transparency.

With regard to Claims 2 and 3, a further difference between Applicant's admitted prior art and the claimed invention is, an organic pixel electrode including an organic polymer and comprising PEDOT. AGFA discloses a transparent conductive polymer (PEDOT) which can be used as the material for transparent electrodes in thin film transistors. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Applicant's admitted prior art to include an organic pixel electrode including an organic polymer and comprising PEDOT, as clearly suggested by AGFA, in order to provide an electrode in a LCD device with full flexibility and improved transparency.

With regard to Claim 4, Applicant's admitted prior art teaches switching elements (25a-d) which include thin film transistors (TFT).

With regard to Claim 6, Applicant's admitted prior art teaches a gate electrode (25a), a gate insulating layer (25b) over the gate electrode, a semiconductor layer (25c) on the gate insulating

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layer and over the gate electrode and source and drain electrodes (25d, 25e) on the semiconductor layer.

With regard to Claim 7, Applicant's admitted prior art teaches pixel electrodes (29) connected to drain electrodes (25e).

With regard to Claim 8, Applicant's admitted prior art teaches a passivation layer (27) over the plurality of switching elements (25a-d) and over the first substrate (21).

With regard to Claim 12, Applicant's admitted prior art teaches a passivation layer (27) which includes an inorganic material (silicon nitride, silicon oxide, BCB).

With regard to Claim 13, Applicant's admitted prior art teaches a substrate (21) having an active area defined by source and drain electrodes (25d, 25e) and pad area defined by gate electrode (25a), a gate line and a crossing data line (page 2, lines 22-23), a thin film transistor (TFT) at a crossing between the gate and data lines (page 2, lines 23-24), a passivation layer (27) over the thin film transistor, wherein the passivation layer includes a contact hole (page 4, lines 6-8) and a pixel electrode (29) formed in the active area, wherein the pixel electrode connects to the thin film transistor through the contact hole.

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However, Applicant's admitted prior art fails to teach that pixel electrodes comprise organic material. AGFA discloses a transparent conductive polymer which can be used as the material for transparent electrodes in thin film transistors. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Applicant's admitted prior art to include a pixel electrode comprising an organic material, as clearly suggested by AGFA, in order to provide an electrode in a LCD device with full flexibility and improved transparency.

With regard to Claims 14 and 15, a further difference between Applicant's admitted prior art and the claimed invention is, an organic pixel electrode including an organic polymer and comprising PEDOT. AGFA discloses a transparent conductive polymer (PEDOT) which can be used as the material for transparent electrodes in thin film transistors. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Applicant's admitted prior art to include an organic pixel electrode including an organic polymer and comprising PEDOT, as clearly suggested by AGFA, in order to provide an electrode in a LCD device with full flexibility and improved transparency.

With regard to Claim 16, a further difference between the claimed invention and Applicant's admitted prior art is, an organic pixel electrode that is electrically-conductive. AGFA discloses a transparent conductive polymer (PEDOT) which can be used as the material for transparent

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electrodes in thin film transistors. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Applicant's admitted prior art to include an organic pixel electrode that is electrically-conductive, as clearly suggested by AGFA, in order to provide an electrode in a LCD device with full flexibility and improved transparency.

With regard to Claim 17, Applicant's admitted prior art teaches a pixel electrode (29) that is in an area bounded by gate and data lines. However, Applicant's admitted prior art fails to teach it is an organic pixel electrode. AGFA discloses a transparent conductive polymer (PEDOT) which can be used as the material for transparent electrodes in thin film transistors. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Applicant's admitted prior art to include an organic pixel electrode that is in a pixel area, as clearly suggested by AGFA, in order to provide an electrode in a LCD device with full flexibility and improved transparency.

Claims 5 and 9-11 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Applicant's admitted prior art figures 1-2E, and their description on pages 2-4 of the instant application, in view of AGFA (PEDOT Coating Solutions and Screen Printing Pastes Product in development) and further in view of Kim et.al. (U.S. Patent No. 6,038,008). With regard to Claim 5, Applicant's admitted prior art and AGFA, as stated supra, essentially disclose the claimed

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invention but fail to show, that the thin film transistors are *amorphous* thin film transistors. Kim discloses a liquid crystal display device which includes an amorphous silicon (a-Si) film (122) as part of a TFT, see column 4, line 41. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by the teachings of Applicant's admitted prior art and AGFA to include amorphous thin film transistors as part of the device, as clearly suggested by Kim, in order to provide transistors having a material known for its lower interface density.

With regard to Claims 9-11, a further difference between the claimed invention and Applicant's admitted prior art and AGFA is, passivation layer including an organic material, wherein the organic material includes BCB or acryl. Kim discloses a liquid crystal display device which includes a passivation layer (126) that is made of an organic material and which includes BCB or acryl, see column 4, lines 60-67. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by the teachings of Applicant's admitted prior art and AGFA to include passivation layer including an organic material, wherein the organic material includes BCB or acryl, as clearly suggested by Kim, in order to provide a passivation layer including a material which reduces leakage current and cross-talks because of its low dielectric constant.



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***Response to Arguments***

2. Applicant's arguments with respect to claims 1-17 have been fully considered, but are not deemed persuasive for the reasons stated in the body of the office action. Applicant argues that *"There is no suggestion in AGFA that would motivate to use an organic polymer as a pixel electrode in a liquid crystal display device"*, however the examiner disagrees and notes that as stated in the rejection, AGFA discloses a transparent conductive polymer which can be used as the material for transparent electrodes in thin film transistors and for transparent conductive lines and paths in displays and electronic circuits, (See AGFA, page 1 column 2, lines 32-34 and page 2 column 2, lines 8-9), thus the reference clearly suggests the use of an organic polymer material, such as PEDOT, for an electrode as part of a display device. Applicant also argues that *"Without an ITO layer, the invention of Kim relating to improving 'the adhesion between the organic protection layer and the ITO layer' is unnecessary"*, the examiner notes that as stated in the rejection, Kim was cited for the teaching of *amorphous* thin film transistors which have lower interface density and not for the teaching of adhesion between the layers of the display device. In view of the above, the claimed invention does not structurally or patentably distinguish over that taught by the prior art as shown in the rejection.

***Conclusion***

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Edgardo Ortiz (Art Unit 2815), whose telephone number is (703) 308-6183 or by fax at (703) 308-7722. In case the Examiner can not be reached by a direct telephone call, you might call Supervisor Eddie Lee at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 receptionist whose telephone number is (703) 308-0956.

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10/1/03

  
GEORGE ECKERT  
PRIMARY EXAMINER